

CLAIMS

1. (Amended) A solid electrolytic capacitor comprising a capacitor element having an anode foil and a cathode foil wound with a separator interposed therebetween, the capacitor element being provided with a solid electrolyte layer of an electroconductive polymer by impregnating the capacitor element, after being chemically repaired, with a polymerizable monomer and an oxidizing agent,

wherein the binder of the separator comprises a compound with a vinyl group, and the content of the binder in the separator is 10 to 20% with respect to the total weight of the separator by immersing the capacitor element in hot water at a temperature of 60 to 100°C prior to the chemical repair.

2. (Amended) A solid electrolytic capacitor comprising a capacitor element having an anode foil and a cathode foil wound with a separator interposed therebetween, the capacitor element being provided with a solid electrolyte layer of an electroconductive polymer by impregnating the capacitor element with a polymerizable monomer and an oxidizing agent,

wherein the separator contains as a binder 10 wt% or more of a compound with a vinyl group, and one or two compounds selected from acetylene diol and dimethyl lauryl amine oxide are added to the capacitor element.

3. (Amended) A solid electrolytic capacitor comprising a capacitor element having an anode foil and a cathode foil wound with a separator interposed therebetween, the capacitor element being provided with a solid electrolyte layer of an

electroconductive polymer by impregnating the capacitor element with a polymerizable monomer and an oxidizing agent,

wherein a compound with a vinyl group is added to the separator, a borate compound is added to the capacitor
5 element and heated, and a conjugate composed of a borate compound and the compound with a vinyl group is added to the capacitor element.

4. (Amended) The solid electrolytic capacitor according
10 to claim 3, characterized in that the borate compound is boric acid or borax.

5. (Amended) The solid electrolytic capacitor according to claim 3, characterized in that the separator contains as a
15 binder 10 wt% or more of a compound with a vinyl group, and a predetermined coupling agent is added to the capacitor element prior to impregnation with the polymerizable monomer and the oxidizing agent.

20 6. (Amended) The solid electrolytic capacitor according to claim 5, characterized in that the coupling agent is a single coupling agent, or two or more coupling agents selected from a silane coupling agent, a titanium coupling agent, and an aluminum coupling agent.

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7. (Amended) A solid electrolytic capacitor comprising a capacitor element having an anode foil and a cathode foil wound with a separator interposed therebetween, the capacitor element being provided with a solid electrolyte layer of an

electroconductive polymer by impregnating the capacitor element with a polymerizable monomer and an oxidizing agent,

wherein a compound with a vinyl group is added to the separator, and a conjugate composed of dodecylbenzenesulfonic acid and the compound with a vinyl group is added to the capacitor element.

8. (Amended) A solid electrolytic capacitor comprising a capacitor element having an anode foil and a cathode foil wound with a separator interposed therebetween, the capacitor element being provided with a solid electrolyte layer of an electroconductive polymer by impregnating the capacitor element with a polymerizable monomer and an oxidizing agent,

wherein a compound with a vinyl group is added to the separator, and a conjugate composed of sodium naphthalene-sulfonate and the compound with a vinyl group is added to the capacitor element.

9. (Amended) A solid electrolytic capacitor comprising a capacitor element having an anode foil and a cathode foil wound with a separator interposed therebetween, the capacitor element being provided with a solid electrolyte layer of an electroconductive polymer by impregnating the capacitor element with a polymerizable monomer and an oxidizing agent,

wherein a compound with a vinyl group is added to the separator, and the capacitor element wound using this separator is immersed in a polyimide silicon solution to form a film composed of polyimide silicon and a compound with a vinyl group on the surface of an oxide film.

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10. (Amended) A solid electrolytic capacitor comprising a capacitor element having an anode foil and a cathode foil wound with a separator interposed therebetween, the capacitor element being provided with a solid electrolyte layer of an electroconductive polymer by impregnating the capacitor element with a polymerizable monomer and an oxidizing agent,

wherein a compound with a vinyl group is added to the separator, and the capacitor element wound using this separator is immersed in a polyimide silicon solution to form, on the surface of an oxide film, a film consisting of two layers, one of which is of a compound with a vinyl group and the other of which is formed thereon of polyimide silicon.

11. (Amended) The solid electrolytic capacitor according to any of claims 1 to 3 and 7 to 10, characterized in that the compound with a vinyl group is polyvinyl alcohol.

12. (Amended) The solid electrolytic capacitor according to any of claims 1 to 3 and 7 to 10, characterized in that the polymerizable monomer is a thiophene derivative.

13. (Amended) The solid electrolytic capacitor according to claim 12, characterized in that the thiophene derivative is 3,4-ethylene dioxythiophene.

14. (Amended) A method for manufacturing a solid electrolytic capacitor comprising the steps of forming a capacitor element by winding an anode foil and a cathode foil with a separator interposed therebetween, chemically

repairing the same, and then impregnating the capacitor element with a polymerizable monomer and an oxidizing agent to form a solid electrolyte layer of an electroconductive polymer,

5 wherein the binder of the separator comprises a compound with a vinyl group, and the content of the binder in the separator prior to chemical repair is adjusted to be 10 to 20% with respect to the total weight of the separator by immersing the capacitor element in hot water at a temperature
10 of 60 to 100°C prior to the chemical repair.

15 15. (Amended) A method for manufacturing a solid electrolytic capacitor comprising impregnating a capacitor element formed by winding which an anode foil and a cathode foil with a separator interposed therebetween, with a polymerizable monomer and an oxidizing agent to form a solid electrolyte layer of an electroconductive polymer,

20 wherein a separator containing as a binder 10 wt% or more of a compound with a vinyl group is used as the separator, and one or two compounds selected from acetylene diol and dimethyl lauryl amine oxide are added to the capacitor element prior to impregnation with the polymerizable monomer and the oxidizing agent.

25 16. (Amended) A method for manufacturing a solid electrolytic capacitor characterized in that an anode foil and a cathode foil are wound with a separator composed of a compound with a vinyl group interposed therebetween to form a capacitor element, the capacitor element is impregnated with
30 a solution of a borate compound and heated to form a

conjugate composed of the borate compound and the compound with a vinyl group, and a solid electrolyte layer comprising an electroconductive polymer is formed thereafter.

5 17. (Amended) The method for manufacturing a solid electrolytic capacitor according to claim 16, characterized in that a separator containing as a binder 10 wt% or more of a compound with a vinyl group is used as the separator, and a predetermined coupling agent is added to the capacitor
10 element prior to impregnation with the polymerizable monomer and the oxidizing agent.

18. (Amended) The method for manufacturing a solid electrolytic capacitor according to claim 17, characterized
15 in that the coupling agent is a single coupling agent, or two or more coupling agents selected from a silane coupling agent, a titanium coupling agent, and an aluminum coupling agent.

20 19. (Amended) A method for manufacturing a solid electrolytic capacitor characterized in that an anode foil and a cathode foil are wound with a separator composed of a compound with a vinyl group interposed therebetween to form a capacitor element, the capacitor element is impregnated with
25 a solution of dodecylbenzenesulfonic acid to form a conjugate composed of the dodecylbenzenesulfonic acid and the compound with a vinyl group, and a solid electrolyte layer of an electroconductive polymer is formed thereafter.

20. (Amended) A method for manufacturing a solid electrolytic capacitor characterized in that an anode foil and a cathode foil are wound with a separator composed of a compound with a vinyl group interposed therebetween to form a capacitor element, the capacitor element is impregnated with a solution of sodium naphthalenesulfonate to form a conjugate composed of the sodium naphthalenesulfonate and the compound with a vinyl group, and a solid electrolyte layer comprising an electroconductive polymer is formed thereafter.

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21. (Amended) A method for manufacturing a solid electrolytic capacitor comprising impregnating a capacitor element formed by winding which an anode foil and a cathode foil with a separator interposed therebetween, with a polymerizable monomer and an oxidizing agent to form a solid electrolyte layer of an electroconductive polymer,

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wherein a compound with a vinyl group is added to the separator, the capacitor element wound using this separator is impregnated with a polyimide silicon solution to form a film composed of a polyimide silicon and a compound with a vinyl group on the surface of an oxide film, and a solid electrolyte layer composed of an electroconductive polymer is formed thereafter.

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22. (Amended) A method for manufacturing a solid electrolytic capacitor comprising impregnating a capacitor element formed by winding which an anode foil and a cathode foil with a separator interposed therebetween, with a polymerizable monomer and an oxidizing agent to form a solid electrolyte layer of an electroconductive polymer,

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wherein that a compound with a vinyl group is added to the separator, the capacitor element wound using this separator is impregnated with a polyimide silicon solution to form, on the surface of an oxide film, a film consisting of two layers one of which is of a compound with a vinyl group and the other of which is formed thereon of a polyimide silicon, and a solid electrolyte layer composed of an electroconductive polymer is formed thereafter.

23. (Amended) The method for manufacturing a solid electrolytic capacitor according to any of claims 14 to 16 and 19 to 22, characterized in that the compound with a vinyl group is polyvinyl alcohol.

24. (Amended) The method for manufacturing a solid electrolytic capacitor according to any of claims 14 to 16 and 19 to 22, characterized in that the polymerizable monomer is a thiophene derivative.

25. (Amended) The method for manufacturing a solid electrolytic capacitor according to claim 24, characterized in that the thiophene derivative is 3,4-ethylene dioxythiophene.

26. (Cancelled)

27. (Cancelled)

28. (Cancelled)